

tion of Dr. L. Errera, professor in the University of Brussels, and Dr. E. Laurent, professor in the State Agricultural Institute at Gembloux.³

These plates are of the same size as the well-known charts of Kny. The figures are not so numerous on each plate as to make them too small for ordinary lecture room, such as those seating 100-150, but for large halls they would be too small. To obviate this difficulty the publisher has arranged to furnish lantern slides in colors for those desiring them instead of the plates. The illustrations have been drawn from photographs of actual experiments, and particular pains have been taken to show the condition at the beginning as well as at the end of the experiment. The drawings are well executed and the plates are in every way commendable.

In the accompanying text the authors have given a generally satisfactory account of the phenomena illustrated upon the plates. Though brief, these explanations are usually comprehensive and clearly stated. The 100 pages of quarto text with their 86 half-tone reproductions of many of the figures on the plates form therefore almost a text-book of physiology. The subjects treated and the corresponding plates are as follows: I, the chemical composition of the plant and nutrition by the roots; II, respiration; III, nutrition by the leaves; IV, transpiration; V, saprophytic and parasitic plants and fermentation; VI, VII, carnivorous plants (*Drosera*, *Dionæa*, and *Nepenthes*), and fixation of nitrogen by *Leguminosæ*; VIII, IX, growth of roots, etiolation, growth of stems in length and thickness; X, geotropism; XI, heliotropism; XII, XIII, twining and climbing plants; XIV, the movements of leaves and flowers; XV, the variability of species as illustrated by the races of cabbage.

If all copies are printed on thin paper, as is that sent for notice, the plates would require mounting before they could be used safely as wall charts in the laboratory or class room. This, however, would not add very much to the cost, and the price at which the set is sold is certainly very reasonable.—C. R. B.

Grasses of North America.

SUCH is the title of Professor Beal's work whose second volume has just appeared,⁴ almost ten years after the first. This volume is noteworthy as it is the first attempt to bring together in a handy book all the grasses north

³ERRERA, L. et LAURENT, E.—Planches de physiologie végétale. Quinze planches murales en couleurs. 70×85^{cm}. Texte descriptif français, et explication des planches en français, en allemand et en anglais. 4to. pp. 102. figs. 86. Bruxelles: Henri Lamertin, 20 rue du Marché au Bois. 1897. 50 francs.

⁴BEAL, W. J.—Grasses of North America. Vol II. The grasses classified, described, and each genus illustrated, with chapters on their geographical distribution and a bibliography. 8vo. pp. viii + 706. New York: Henry Holt & Co. 1896.

of Mexico, and includes also the Pringle and Palmer Mexican collections. To those of us who know of the professional duties of Professor Beal, this large volume comes with a measure of surprise. That he could find time to undertake, and had the persistence to continue the use of his fragments of time long enough to reach this result, speaks well for his devotion to the subject. The author has fully described in these pages 912 species, 809 of which are natives. About 160 new names occur, arising from various causes, forty of them being those of unpublished species, chiefly Mexican.

Analytical keys are quite a feature of this volume, the author doing all in his power to facilitate the work of identification. The usefulness of keys must be tested by a somewhat wide range of use, so that no statement of Professor Beal's success in this regard can be made in advance.

Taking into consideration the shifting of opinions certain to occur during an active period of ten years, the author must have found it very laborious to adapt his work to every new statement of view that investigation proved worthy. It is to be expected that agrostologists will discover numerous things to which exception may be taken, but the writer has discovered, through painful experience, that the making of a manual covering a large area, or a large number of groups, calls for such an immense amount of detail that many things are sure to escape notice until too late to remedy. Professor F. Lamson-Scribner⁵ has called attention to some of these with such detail as to make his notice useful as a permanent appendix to the volume.

The book is a great boon to agrostologists, and will stimulate the study of a group neglected out of all proportion to its importance.—J. M. C.

A new text-book and dictionary.

It seems evident that the elementary text-book of botany still remains to be written. The great development of morphology has tended towards excluding from our texts the larger relations of plants. Such taxonomy as is presented is of the sterile, pigeon hole kind, singularly free from evolution, morphology, ecology, geographical distribution, or anything else that gives taxonomy significance. Any indication that an elementary presentation of botany should include a consideration of plants as holding a definite place in nature, as occurring in societies that are determined by many external factors, as bound together by various genetic relationships, as consisting of organs which have an evolutionary history, should be hailed as the promise of better things.

Mr. Willis has prepared a book⁶ which should be so regarded. Its pri-

⁵Science 5: 62. 1897.

⁶WILLIS, J. C.—A manual and dictionary of the flowering plants and ferns. 2 vols. 8vo. Vol. I, pp. xiv + 224. Vol. II, pp. xiii + 429. Cambridge: The University Press; London: C. J. Clay & Sons. 1897. 10s. 6d.